Rebuild Hawaii Consortium Meeting
February 21, 2007
HEI Training Room, 8th floor
American Savings Bank Building, Alakea and S. King Sts.
Honolulu, Hawaii

Notes
You can find copies of these notes and presentations on the Internet at http://www.rebuildhawaii.us

Attendees are listed on the final page.

WELCOME AND INTRODUCTIONS

Jim Maskrey, Rebuild Hawaii Consortium President, welcomed the group and announced that he has resigned from HECO and joined Sopogy, Inc. as Vice President of Business Development and Sales. Sopogy is a local solar power technology company. Steve Chang will take Jim's place as HECO's coordinator for Rebuild Hawaii (RBH) activities, and HECO will continue in their support of the RBH Consortium.

Jim described the Consortium as a "virtual organization" that meets quarterly to share information on new energy projects and technologies. He observed that the RBH Consortium continues to thrive and grow.

Jim then introduced Peter Ammerman, who has replaced John Hao as the Energy Coordinator for the Hawaii Army National Guard. He also introduced several guests present at the meeting, including Barry Madrid, Ameresco; Jesse Tano, Actus Lend Lease; Phyllis Horner, Leader's Wisdom; Rick Schnarr, Trane; June Burke, Grainger Industrial Supply; Bettina Arrigoni, County of Hawaii Department of Water Supply; Ron Tanaka, City and County of Honolulu; and Keith Block, HECO.

Jim announced that Steve Golden has resigned as Vice President of the RBH Consortium, and that Eileen Yoshinaka has been appointed interim Vice President. Consortium members expressed their unanimous support for this appointment.

PRESENTATIONS

Maurice Kaya, Hawaii Department of Business, Economic Development and Tourism: *U.S. EPA-Hawaii Clean Energy and the Environment Partnership, and Other New State Initiatives*

Maurice described the major energy conservation legislation and policy initiatives implemented in Hawaii in 2006 and planned for 2007. He discussed how Federal funding for Rebuild Hawaii and other State energy initiatives, primarily through the U.S. Department of Energy, has been decreasing. As a result, the State has been looking to the EPA's Clean Energy and the Environment Partnership to support these energy initiatives. Maurice said that a Partnership kickoff meeting was held on December 15, 2007, where the State's needs and EPA's capabilities were discussed and points of contact assigned. The State contact for the Partnership will be Elizabeth Raman and EPA's primary contact will be Denise Muholland. Currently, discussions are focusing on how to leverage each partner's strengths in order to implement the State's

priorities of green purchasing, lead by example/energy efficiency, and policy actions to address climate change.

Bill Parks, U.S. Department of Energy (DOE): ***Washington Perspective***
Bill is in Hawaii on a two-year support assignment, detailed to DBEDT. He is working primarily on implementation of the Energy Policy Act of 2005, focusing on renewable energy technologies (high efficiency PV cells, cellulosic feed stock, wind technologies) and energy policy (utility fuel diversity, Hawaii's dependence on imported oil). He is also working to help rebuild State/DOE partnerships and State DOE offices, funding for which has been co-opted by other National priorities. Additionally, he is evaluating ways to address the energy needs of other Pacific Island entities. Bill said he would be looking at several local projects, including the hydrogen power park on the Big Island, the impact of renewable energy on island transmission grids, micro grids, and bio-energy. He observed that Hawaii's energy needs would likely be met by a varied portfolio of applications.

Manfred Zapka, Mark M. Siah & Associates: ***Deep Ocean Water Applications – Power and Desalination Technologies for Hawaii***
Manfred remarked that two of Hawaii's largest challenges are securing an adequate supply of fresh water and reducing our dependence on imported oil. He is currently working on two projects that adapt ocean thermal energy conversion technologies (OTEC) to address these challenges. The first project draws on OTEC as an energy source to distill seawater utilizing: 1) multiple (as opposed to single) module flashing; 2) a high volatility working fluid (ammonia); and 3) relatively warm power plant cooling water discharge as distillation system feed. The second project Manfred described is a small OTEC electrical generation plant his firm is evaluating in the Marshall Islands. High conventional (diesel) fuel costs and the availability of cold deep ocean water suggest the plant would be economically viable, with a simple payback of 13 to 20 years (depending on future fossil fuel costs).

Bill Nutting, Energy Manager, Marine Corps Base Hawaii (MCBH): ***Energy Projects Update***
Implementation of energy efficiency projects in the Marine Corps is driven by the Energy Policy Act of 2005 and a Presidential Executive Order issued on January 24, 2007. The Defense Utility Energy Reduction System (DUERS) acts as a "report card" to assess the effectiveness of Bill's energy efficiency efforts. Current energy projects at MCBH include new bachelor's enlisted quarters buildings being built to LEED Silver Criteria and a new energy savings performance contract (ESPC) that will involve lighting and plumbing retrofits, daylighting, A/C system improvements, several PV projects, wind turbines, and small-scale hydroelectric plants. New technologies being evaluated include LED parking lot lights, ice thermal storage for air conditioning, local area network (LAN) based energy management systems, real-time remote meter monitoring, and their wave energy technology project. These new technology evaluation projects are being funded primarily by utility rebates from other energy projects on base.

Kevin Saito, Energy Manager, Navy Region Hawaii: ***Energy Projects Update***
Kevin said that the Region realized a 2-3% reduction in energy use last year, achieved primarily through a program of energy awareness. Upcoming activities include a 70 kW photovoltaic system in building 166 at Pearl Harbor, waterless urinals, a 300 kW molten carbonate fuel cell

demonstration project at the Pacific Missile Range Facility on Kauai, high-bay lighting and solar window film projects, and a new ESPC task order for 2,000 to 5,000 ton district cooling project. Kevin is also implementing a training program for Navy designers, planners, facilities managers, and maintenance personnel to enhance their ability to use energy more efficiently.

Garret Takata, Central Pacific Bank: ***Solar Leasing and Energy Equipment Financing***
Garret explained the reasons a business might want to acquire a photovoltaic (PV) system, and described the ideal PV candidate; *i.e.*, a business owner who owns a commercial building or has a long-term lease, is seeking to control energy costs, and can take full advantage of State and Federal tax incentives. He explained the relative advantages of loan financing versus lease financing of PV systems, emphasizing the advantages of lease financing (monthly lease payments are offset by utility cost savings, lower interest rate because the lessor can claim the tax credits, and the need for minimal cash outlay). Garret described the State and Federal tax credits for PV, and then laid out an action plan to implement a PV project. This plan consists primarily of seeking out and retaining a reputable and experienced PV contractor, and working closely with your bank/lease representative and accountant on the financial aspects of the project.

Jay Kwak, Bank of Hawaii: ***Lessons Learned and Financial Risks of Solar and Energy Leasing***
Jay pointed out that PV projects are dependent on State and Federal tax credits and net metering to be financially viable. As nonprofit and government entities cannot utilize the tax credits, PV projects may not be appropriate for them. Even with the tax credits, he said, PV may not be feasible except with high electricity rates. It has been their experience that putting together an agreement to purchase power from a third party independent developer who develops and owns the PV system (such as SunEdison; see below) significantly reduces the risk for businesses wishing to utilize photovoltaics.

Brian Robertson, SunEdison: ***Simplifying Solar***
Brian addressed his firm's services in providing turnkey PV systems for commercial businesses. His company designs, finances, builds, owns, operates and maintains facility-scale PV systems, and sells electricity to commercial or government entities at a predictable cost. He said that there are no up-front or O&M costs to the electricity user, and that the user pays only for the electricity used. Brian stated that current price for electricity from his company's PV facilities in Hawaii is on the order of 15-18 cents per kW-hr, with a 1-2% annual escalator.

Steve Chang, HECO: ***Food Services Efficiency – Recipes for Success***
Steve described the breakdown of energy use at typical restaurants in Hawaii, showing that refrigeration, cooling, lighting and cooking are the major consumers. He then discussed ten energy conservation measures that can be implemented to reduce energy costs. These ECMs are: more efficient fryers, freezers, griddles, refrigerators, ovens, ice machines, lighting, air conditioning, exhaust fans, and dishwashers. Comparing two hypothetical restaurants, Steve showed that a restaurant buying more energy-efficient equipment based on life cycle costs would have a significant annual savings compared to a restaurant purchasing conventional equipment.

Tom Van Liew, DBEDT: ***Institutional Food Services Efficiencies***
Tom related his experience in auditing institutional food services on military bases in Hawaii. He observed that food services are characterized by high occupancy in typically small spaces, long operating hours, diverse equipment and fuel sources, and high ventilation requirements. Utility costs are usually about 8% of total operating cost. In auditing six food service facilities encompassing some 46,000 square feet on Hickam Air Force Base, Tom found that total energy costs were about $500,000 annually. Applying a set of energy conservation measures - such as utilizing more efficient cooking, refrigeration and air conditioning equipment, solar water heating, upgraded lighting, premium efficiency motors, and water conservation measures – an annual energy savings of approximately 20% , or $100,000, could be achieved.

Michael Markrich, MicroPlanet: ***MicroPlanet High Voltage Regulator Test Results***
MicroPlanet manufactures residential and commercial voltage regulators that stabilize grid-voltage input to buildings. These regulators were recently installed and tested on a three-bedroom air conditioned home at Iroquois Point on Oahu. Mike stated that by stabilizing the input voltage, the regulator was able to achieve 7.8% savings in energy consumption, leading to a cost savings of $450 per year. In January of this year HECO approved MicroPlanet's equipment as a DSM measure, and the firm is currently working with four island builders to further test and demonstrate the value of their equipment.

Rory Reiley, Facilities Engineer: ***Performance Verification of Residential Air Conditioning Systems***
Rory has been involved in performance verification of residential air conditioning systems and conducting reality checks of proposed new A/C technologies. He pointed out that, in his experience, sizing an A/C system for a residential building is based on varying and sometimes inappropriate or conflicting engineering assumptions and calculations. As a result, such systems may be improperly sized, either too small or unnecessarily large and costly. In addition, he has found that A/C systems may not be properly installed, with undersized ductwork and improper filters. Rory also discussed the need for proper equipment commissioning to optimize system performance.

Tim O'Connell, U.S. Department of Agriculture: ***USDA-RDA Energy Programs***
Tim is the Rural Energy Coordinator for the USDA's Rural Development Administration in Hawaii. He described his organization's Section 9006 program, which provides funding for rural energy efficiency and renewable energy projects. Specifically, the Section 9006 program is designed to assist farmers, ranchers and rural small businesses in implementing energy projects by providing guaranteed loans and grants. Tim said his organization is actively looking to solicit more energy project applications from eligible Hawaii entities. Eligible entities are defined as any rural small businesses or agricultural producers located and operating anywhere in Hawaii except the developed areas of Oahu. Eligible projects are virtually any energy efficiency or renewable energy project, with the exception of research and development projects. Tim encouraged interested organizations to contact him in his Hilo office at (808) 933-8313 or tim.oconnell@hi.usda.gov.

Tom Brennan, Eco-Light: ***PowerRim CFL Adapter System for Downlights***
Tom briefly described a new compact fluorescent lamp fixture that features a "cool zone" rim where the ballast is located, keeping operating temperatures away from the lamp and virtually eliminating early failures.

The Rebuild Hawaii Consortium shares information about new products, practices and services, but does not promote or endorse products or vendors.

Attendees

Actus Lend Lease—*Jesse Tano*
Ameresco*—Barry Madrid*
Bank of Hawaii—*Jay Kwak*
Central Pacific Bank*—Garret Takata, Mel Okada*
Chamber of Commerce of Hawaii—*Steve Chang*
City & County of Honolulu--*Allyn Lee****,*** *Ronald Tanaka*
County of Hawaii Energy Coordinator—*Bob Arrigoni*
County of Hawaii Department of Water Supply*—Bettina Arrigoni*
County of Kauai—*Glenn Sato*
Department of Accounting and General Services—*JR Richardson*
Department of Business, Economic Development & Tourism (DBEDT)-–*Maurice Kaya, Liz Raman, Howard Wiig, Tom Van Liew*
Department of Defense (HARNG)—*Peter Ammerman*
Department of Education— *Nick Nichols, Brenda Lowrey, Sak Elliot, Bill Denham*
Eco-Lite– *Tom Brennan*
Energy Industries—*Karen Leifheit*
Grainger—*June Burke*
Hawaii Building Engineers Association—*Rory Reiley*
Hawaii Public Housing Authority—*Richard Speer*
Hawaiian Electric Company, Inc. (HECO) —*Keith Block****,*** *Steve Chang, Dean Oshiro, James Brown, Diane Filibeck, Lily Koo, Steve Luckett, Peter Yuen*
Illuminating Engineers Society—*Howard Wiig*
Island Pacific Academy—*Hartson Doak*
Leader's Wisdom—*Phyllis Horner*
Micro-Planet—*Mike Markrich*
MMS Engineering—*Manfred Zapka*
Scheibert Energy Company—*Lourdes Scheibert, Todd Scheibert*
Sharon Ching Architect—*Sharon Ching Williams*
Sopogy—*Jim Maskrey*
Sun Edison—*Brian Robertson, Chris Whitman (Allco)*
Tetra Tech, Inc.--*Frank Kingery, Chris Lippert*
Tower Design Group—*Eric Kim*
Trane—*Rick Schnarr*
U.S. Department of Agriculture—*Tim O'Connell, Irene Lam*
U.S. Department of Energy—*Bill Parks*
U.S. Marine Corps--*Bill Nutting, John Dunbar*
U.S. Navy
NAVFACHAWAII—*Kevin Saito*
University of Hawaii Community Colleges—*Rodney Yim*